

Same, same but different? A discourse perspective on the climate policy agenda in Switzerland before and after the Paris Agreement

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Abstract

The Paris Agreement of 2015 brought drastic changes in key regime design features. In contrast to its predecessor, it follows a bottom-up approach of nationally determined contributions (NDC) by both developed and developing countries. This change from top-down obligations for selected countries to universal, bottom-up commitments remarked an important paradigm-shift in the international climate regime. However, negotiators cannot make concessions that are not reinforced by their governments. At the domestic level, policy makers are confronted with many different not seldom competing policy issues. Often, phases of higher public attention link to incisive ‘focusing’ events occurring outside the influence of the actors of a policy subsystem. These events sometimes bring new topics on the policy agenda and jeopardise the status quo by strengthening the stakes of the political opposition. By analyzing the rise and fall of public attention to climate change in Switzerland in the past two decades (1997 to 2017), we aim to learn more about how international developments have affected the domestic policy discourse. Moreover, by closely investigating and comparing two crucial points in time (2007-08 and 2017), we strive to understand how these international developments have affected specific policy positions of core actors and how they have altered the constellations of prevailing discourse coalitions in the climate policy subsystem. Methodologically, we use discourse network analysis (DNA) to code and analyse Switzerland’s policy discourse on climate change. As a data source, we draw on three daily newspapers (“TagesAnzeiger”, “Neue Zürcher Zeitung”, “Le Temps”). Our results show that media attention rose with important events like the Bali summit in 2007, or prior to the climate conference in Copenhagen in 2009. It steeply decreased in 2008, when the outbreak of the financial crisis steered public attention towards economic topics and after the failure of the Copenhagen conference in 2009. Moreover, our results show, that the Swiss policy discourse was less polarised in 2007-08 than in 2017. We find that in the first phase policy actors from all sides of the political spectrum often agreed on the same climate policy concepts. In 2017, a persistent conflict lasted between a number of hardliners that rejected any further climate protection ambitions (headed by the Swiss People’s Party, SPP) and a number of pro-ecology actors that had a strong stake in the climate protection topic (e.g. the Green Party Switzerland and WWF Switzerland).

1. Introduction

The Paris Agreement of 2015 was a hallmark in the history of international climate change policy, due to drastic changes in key regime design features. Its predecessor, the Kyoto Protocol of 1997, imposed legally binding greenhouse gas (GHG) emission reduction targets only upon Annex I countries (i.e. OECD countries without Mexico and South Korea) and no obligations for non-Annex I countries (all other countries). In contrast, the Paris Agreement follows a bottom-up approach of nationally determined contributions (NDC) by both developed and developing countries. This change from top-down obligations for selected countries to universal, bottom-up commitments remarked an important paradigm-shift in the international climate change regime. However, the United Nations are a negotiation platform, not a world government (Obergassel et al. 2018, p. 12). This implies that negotiators cannot make concessions that are not reinforced by their governments and decisions made at the international scale must be translated into national policies. At the domestic level, policy makers are confronted with many different not seldom competing policy issues. Often, the level of public attention determines what topic successfully reaches the political agenda and what eventually enters the domestic policy process. Although not being a sufficient condition, higher public attention to a topic pressures policy makers “to do something” about it. In this regard, a vivid public discourse can be an important trigger for policy change.

In the policy analysis literature, ‘focusing events’ (Baumgartner 2006; Birkland and DeYoung 2013) are often discussed as causal mechanisms for policy change. Frequently, these incisive events occurring outside the influence of the actors of a policy subsystem, so called ‘external shocks’, jeopardise the status quo by strengthening the stakes of the political opposition. Put differently, altered policy positions and power structures, paired with increased public attention, might induce a ‘window of opportunity’ for policy change to open. In this regard, policy discourses can be highly consequential for political outcomes. In this article, we strive to understand how important international events relate to an alteration of the level of public attention for climate change at the domestic scale. In addition, we aim to investigate how this raise and fall of media attention connects to a reconfiguration of the public discourse possibly creating important preconditions for policy change.

We selected Switzerland as a case study for this analysis for several reasons. Firstly, Switzerland is a small country emitting only around 1% of the global GHG emissions. In this regard, it does not belong to the major players in international climate change politics and it is not in the focus of the international community. Nevertheless, Switzerland tends to act as a forerunner and role model in the international climate regime. For example, the country was among the first to introduce a domestic GHG emission reduction target, a CO₂ tax on combustibles, and pushed early for industrialised countries to support and finance adaptation in developing countries. The strong stake in climate protection measures is partly due to its Alpine geography that makes the country highly vulnerable to climate change impacts. But, also due to the fact that the country is aware of its dependency on other countries to act. However, Switzerland has also been criticised by non-governmental organisations for its low climate performance. Recently, the country only ranked ninth in the climate performance index issued by Germanwatch¹. The reasons are high “grey” emissions, the tendency to buy certificates instead of national reduction measures, and the failure to regulate the transport sector effectively.

By analyzing the rise and fall of the public attention to climate change in Switzerland in the past two decades, we aim to learn more about how international developments have affected the domestic policy process. Moreover, by closely investigating and comparing the policy discourse at two crucial points in time, we strive to understand how these international developments have affected specific policy positions of core actors and how they have altered the constellations of prevailing discourse coalitions in the climate policy subsystem. Eventually, this will allow us to draw conclusions on how decisive international events have affected domestic policies.

For this purpose, we selected two brief, but particularly interesting phases that both showed high levels of public attention to the climate change topic, but differed with respect to the level of ambition of domestic climate policy. In the first phase, 2007-08, spurred by the promising outlook of an ambitious international follow-up agreement to the Kyoto Protocol, policy actors in Switzerland discussed policy options to strengthen climate protection measures. In particular, the Climate Alliance, a union of green parties and environmental organizations launched a public initiative aiming to uplift strict

¹ Compare <https://germanwatch.org/de/ksi>

climate protection objectives to the constitutional level. In 2017, the climate policy network was far more conflictive. Although, Switzerland ratified the Paris Agreement in 2017, policy actors fought over how to translate the obligations following from the ratification into national law. The cleavage divides a group of policy actors that rejects any further climate protection ambitions from almost all other actors, which support the ratification of the Paris Agreement and its implementation.

Methodologically, we use discourse network analysis (DNA) to code and analyse the Swiss climate change policy discourse (Leifeld 2009). As a data source, we will draw on three daily newspapers ("TagesAnzeiger", "Neue Zürcher Zeitung", "Le Temps"). With the help of DNA, we attempt to identify for both phases the most important policy actors, policy concepts (i.e. policy positions or preferences), and discourse coalitions. The dynamic perspective permits to investigate if and how the range of policy concepts discussed, the involved policy actors, and coalitions have changed, over time. We conduct an explorative analysis of the phases using descriptive network analysis tools, such as centralization statistics and cluster analysis.

Our results show that international developments triggered both media attention and the domestic policy process. Media attention rose with important events like the Bali summit and the publication of the Fourth Assessment Report (AR4) of the International Panel on Climate Change (IPCC) in 2007 and prior to the climate conference in Copenhagen. It steeply decreased in 2008, when the outbreak of the financial crisis steered public attention towards economic topics and after the failure of the Copenhagen conference in 2009. These events were decisive external shocks to the policy subsystem, as they changed the configuration of the policy discourse. Specifically, our results show, that the Swiss climate policy discourse was less polarised in 2007-08 than in 2017. We argue that this lower level of polarisation is a result of the overall greater enthusiasm for climate protection triggered by the promising developments at international scale. In particular, the events in 2007 (Bali summit, AR4) opened a window of opportunity for policy change to strengthen Switzerland's climate change policy. In contrast, in 2017, the persistent conflict, which lasted between a number of hardliners that rejected any further climate protection ambitions (headed by the Swiss People's Party, SPP) and a number of pro-ecology actors that had a strong stake in the climate protection topic (e.g. the Green Party Switzerland, GPS), is a consequence of the stalemate at international scale.

Therefore, the failure of the Copenhagen conference and the outbreak of the financial crisis significantly affected Switzerland's climate policy subsystem and closed the window of opportunity for an ambitious climate policy.

2. Explaining policy change

Studying and understanding the factors, triggering *policy change*, is key to *policy analysis*. Policy change is defined as the adjustment of laws, regulations, plans, programs, or even specific policy instruments (Knill and Tosun 2012; Ingold et al. 2016). It is an interesting subject of study for three main reasons. First, policy change is a rare phenomenon and policy stability with only iterative alterations is much more common (Jenkins-Smith et al. 2014). Hence, researchers have the possibility to compare these rare incidents over time, to understand more about causal mechanisms driving policy change (Nohrstedt et al. forthcoming). Second, if there is a new societal problem that reaches the political agenda, there will be new ways of tackling it. It is these new approaches that are of interest to policy researchers (Sager et al. 2018). Finally, there are different streams of literature explaining policy change in different ways (Sabatier and Weible 2014).

2.1 External shocks and focusing events

A prominent hypothesis to explain policy change are shocks (or other factors) that are external to a policy subsystem, meaning that they are outside the control of subsystem participants (Baumgartner and Jones 1993; Sabatier and Jenkins-Smith 1993; Birkland 1997; Kingdon 1995). These *external shocks* are sometimes also called *focusing events*. They are focusing, as they are with respect to their magnitude and their timing in the policy process very much to the point. As a result, these events are able to cause policy change or even alter predominant paradigms (Birkland 1997). Focusing events can be catastrophes like severe flooding, famines, financial crisis, and so on (e.g. Birkland 2015). But, it may be also sudden and drastic changes in other policy fields or on other levels of the political system, like for example a budget shutdown, a resignation of a high-level official, a major political scandal, etc. causing policy or paradigm change (Walgrave and Varone 2008; Sabatier and Jenkins-Smith 1993).

It is important to note here, that external shocks or focusing events need enabling factors to cause policy change, including an increased public or political attention, an agenda change, a redistribution of coalitions or resources, or the opening and closing of policy venues (Jenkins-Smith et al. 2014). Hence, the underlying assumption is that these external shocks cause a disruption in the policy subsystem for example by shifting public attention and political resources towards a new policy issue or away from an established policy issue.

For example, a financial crisis may direct attention and resources away from environmental protection topics. Vice versa, a serious heat wave or flooding event might lead to rising public and political interest in establishing new and stricter climate protection policies. In that sense, focusing events can cause policy change in favour of or to the disfavour of a policy issue.

An important intervening factor determining if a focusing event leads to policy change, is when it is able to affect political actors and their preferences (Weible and Ingold 2018). This has consequences for how actors behave in the policy process, with whom they ally or interact and what strategy they choose to design new policies or propagate the status quo. Following the Advocacy Coalition Framework (ACF), actors form coalitions of like-minded actors based on their political preferences and belief systems (Sabatier and Jenkins-Smith 1993; Ingold 2011; Kübler 2001). When a policy subsystem has two or more coalitions, there are ideological cleavages that separate the coalitions. A focusing event may disrupt this setting of coalitions in a subsystem. New policies are possible, for example, because a traditionally weak pro change coalition is suddenly more popular or powerful, so that they are able to put forward their ideas and interests ultimately causing policy change in a subsystem (Baumgartner et al. 2009). Carried by a peak in public attention to the topic, the traditional balance of power between the coalitions in a subsystem is now changing. However, this can also happen, due to changing preferences in the pro status-quo coalition (Nohrstedt 2010). Caused by the focusing event, the members of the dominant status-quo coalition are subject to policy learning and as a result adjust their preferences (Moyson 2017).

2.2 Discourses and discourse networks

A policy discourse is defined as a verbal interaction between actors about a certain policy (Leifeld 2016). Policy discourse analysis has been well established in the past two decades (Fischer 2003). It pursues the fundamental assumption that the policy solutions to issues that have successfully reached the political agenda are not recognised and designed in a top-down manner. Rather, *policy design* is the product of a policy process that starts with the problem perception, and continues with formulation, implementation and evaluation, until it eventually restarts again (Howlett et al. 2009). Along this *policy cycle*, many different actors interact in a manner of bounded rationality. To account for this subjectivity, policy discourse analysis focuses on the problem

perception and interpretation of the decisive actors in the policy process, as well as on their policy preferences and beliefs. In this context, different research streams have established that look at the meaning of *narratives* and *frames* of interpretation in political decision-making processes (Shanahan et al. 2011; Hajer 1995; Schön and Rein 1994). Other scholars focus on the learning ability of political actors (Moyson 2017; Sabatier and Jenkins-Smith 1993) or understanding processes in political negotiations (Barthe 2001).

In the past decades, *social network analysis* has been established in policy science (Kenis and Schneider 1991; Knoke 1996; Fischer 2014; Ingold 2011). *Policy network analysis* assumes that policies are the result of non-random, stable interactions between public and private actors. About one decade ago, policy network analysis was married to policy discourse analyse, yielding policy discourse network analysis (see Janning et al. 2009). Discourse network analysis links actors, involved in a policy process, when they commonly support or reject a discursive element. Discursive elements are usually policy concepts reflecting a policy preference about how a certain policy should be designed (e.g. specific objectives, targets groups, policy instruments, etc.) (Leifeld 2016). This procedure is interesting, as it allows investigating political agreement and dissent in policy subsystem, without having to ask the involved actors, for example with the help of an elite survey. In addition, a policy discourse can be traced back along a policy process much more accurately than a survey would allow. Hence, discourse network analysis is a very useful tool to investigate the effects of focusing events on actor constellations in a policy subsystem over time.

The literature offers no consensus on whether a discourse network is able to reflect policy change (see for example Tosun and Lang 2016; Leifeld 2016). Put differently, we are not yet sure, if a discourse networks reflects only *politics* or if it also mirrors real *policy output*. Nevertheless, investigating policy discourses by applying network techniques allows the researcher to see when new topics emerge or specific paradigms start to evolve or dissolve. If this is a reliable indicator of policy change, or how much policy as compared to politics a discourse contains, cannot be determined in this article. However, we are aiming to find first indicators for causalities between policy discourses and policy change, paving the way for more research in this important area.

2.3 Research design and theoretical expectations

In this article, we aim to understand if and how important focusing events have triggered policy change in the climate policy subsystem in Switzerland. For this purpose, we first investigate the rise and fall of media attention for the climate change topic between 1997 and 2017. We set this development in context to important external events that had the potential of being a focusing event. We argue that international developments stimulated Swiss climate protection legislation over time. Specifically, we expect a number of crucial external events to be focusing for the climate policy subsystem by increasing public attention. We assume that these specific events are the Kyoto Protocol of 1997, the publication of the Fourth Assessment Report (AR4) of the IPCC and the Bali climate conference in 2007, the Copenhagen climate conference in 2009, and the Paris Agreement of 2015. Conversely, we expect that with the outbreak of the financial crisis in 2008 public attention shifted away from climate change towards economic concerns. This decline was furthermore reinforced with the failure of the Copenhagen climate conference in 2009, which caused a wide disillusionment towards ability of the international climate regime to combat climate change. Based on these considerations we put forward the following theoretical expectations:

Expectation 1a: In Switzerland, the media attention rose and fell with the emergence of focusing events.

Expectation 1b: Media attention rose after 1997 (Kyoto Protocol), in 2007 (Bali climate conference, AR4), and in 2009 (Copenhagen climate conference).

Expectation 1c: Media attention fell after 2008 (financial crisis) and after 2009 (failure of Copenhagen conference).

Moreover, we argue that the most decisive event was the failure of the Copenhagen conference to deliver a follow-up agreement to the Kyoto-Protocol. On one hand, this event caused the drastic paradigm-shift in the international relations paving the way for the Paris Agreement. On other hand, the international fiasco spurred arguments of Switzerland's opposition against a progressive climate change mitigation policy and united them. The pro-ecology coalition (left and green parties and NGOs) supported a very ambitious climate protection legislation to keep up with the Paris Agreement and a Swiss forerunner role. The pro-economy coalition (right wing parties and business sector) did not see the necessity of increasing climate protection efforts in

Switzerland, but disregarded them as being bad for the economy. We argue that prior to the financial crisis and failure of the Copenhagen conference the Swiss climate policy subsystem was less polarised, which opened a window of opportunity for major policy change towards a more ambitious climate protection measures, i.e. the introduction of a carbon tax on motor fuels. After the financial crisis and Copenhagen conference and with the paradigm-shift in the international climate regime, the subsystem became continuously more polarised, which closed the window of opportunity in the subsystem for policy change and led to a long phase of policy stasis, i.e. the introduction of a carbon tax on motor fuel was prevented.

Expectation 2a: The climate policy discourse was less polarised prior to the Copenhagen climate conference and more polarised in the aftermath of its failure.

Expectation 2c: While the events in 1997 (Kyoto Protocol) and in 2007 (Bali Summit, AR4) spurred Switzerland's climate change policy (window of opportunity for policy change opens), the events in 2008 (financial crisis) and in 2009 (failure of the Copenhagen conference) hampered policy change (window of opportunity closes).

3. Data and methods

The data collection encompassed two subsequent steps: searching and counting newspaper articles (media attention analysis) and the coding of actors and policy concepts to create a discourse network (discourse network analysis). For the first step, we counted the number of all articles published on climate change to analyse the development of the media attention from 1997 to 2017. For this purpose, we searched in three national newspapers for articles published on climate change². Table 1 shows for all years the number of articles dealing with climate change and their share relative to the number of all articles that were published on any topic in these outlets.

Based on these numbers, we were now able to determine the development of media attention on the climate change topic over time and to set this development in the context of important external events. The selected newspapers reflect important societal cleavages that are important for the Swiss

² The search string encompassed climate change, global warming, climate protection, and climate politics and policy (German: Klimawandel, globale Erwärmung, Klimaschutz und Klimapolitik).

climate policy discourse: The left-liberal “Tages-Anzeiger (TA), the conservative “Neue Zürcher Zeitung” (NZZ), and the francophone “Le Temps” (TEM).

Table 1: Number and share of articles dealing with climate change

1997-2008			2009-2017		
Year	Articles	Share in %	Year	Articles	Share in %
1997	48(*)	0.05	2009	996(**)	1.19
1998	111	0.10	2010	896(**)	0.99
1999	96	0.08	2011	634(**)	0.64
2000	122	0.10	2012	486(**)	0.53
2001	228	0.18	2013	416(**)	0.53
2002	158	0.13	2014	579(**)	0.74
2003	185	0.16	2015	698(**)	0.87
2004	282	0.24	2016	579(**)	0.99
2005	531	0.43	2017	718(**)	1.45
2006	648	0.47	-	-	-
2007	196	1.51	-	-	-
2008	1324	0.88	-	-	-
Total	5699	0.38	-	6002	0.85

Annotation: Year 1997 & 2009-2017 without Les Temps; (*) no data available, (**) no data collected

The data foundation for the second step, the discourse network analysis, are the years 2007-08 and 2017. We selected those years for several reasons. As Table 1 shows, both 2007-08 and 2017 remark media attention peaks prior to the Copenhagen climate conference (1.88% in 2007 and 1.13% in 2008) and after its failure (1.45% in 2017). In 2007-08, the enthusiasm for implementing the Kyoto Protocol and even negotiating a follow-up agreement was high. In fact, in 2007 the international community settled on the Bali Road Map, which detailed on the necessary steps towards a follow-up agreement. In addition,

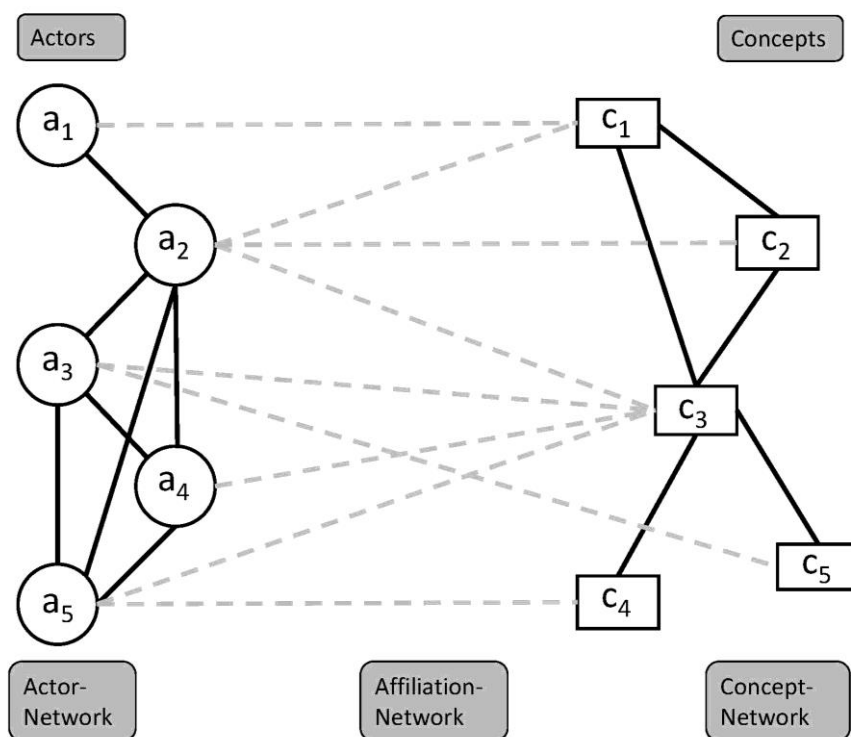
both the IPCC, for its Fourth Assessment Report (AR4), and Al Gore, for his film “An Inconvenient Truth”, won the Peace Nobel Prize. The enthusiasm collapsed with the disastrous failure (Dimitrov 2010) of the international community at the climate conference in Copenhagen in 2009 to settle on a new agreement. On the same time, the Copenhagen conference remarked a turn in the history of the climate negotiations and paved the way for the Paris Agreement of 2015. In small iterative steps, the international community negotiated a completely new climate protection approach that relied on bottom-up, voluntary GHG emission reduction pledges by all countries, instead of top-down obligations for industrialised countries, only. The year 2017 reflects the peak of this development so far, with drafting the Paris Rulebook as a first attempt to implement the Paris Agreement. For the creation of the discourse network, we significantly reduced the number of articles, as only a fraction of articles deals with the domestic climate policy discourse. Specifically, we used only such articles that state the opinion or policy preferences of collective, political actors like governments, administrative agencies, parliamentary actors, interest groups, civil society groups, private or public companies, or science (Coleman 1974).

We created the discourse network using the Discourse Network Analyser (DNA, Leifeld 2018) by assigning political statements to actors and policy concepts. For the first period, we identified 390 statements in 114 articles and matched 43 policy concepts to 65 actors. For the second period, we identified 273 statements in 39 articles and matched 37 policy concepts and 47 actors. The policy concepts are generalised policy preferences or beliefs with respect to climate change and climate change politics. These beliefs may reflect the policy core (e.g. “climate change as business opportunity” or “climate change is one of the biggest challenges of humanity”) or secondary aspects (e.g. “CO₂ label for food” or “CO₂ tax on combustibles”). Consult Appendix A for a complete list of political actors and concepts.

After having assigned the political actors and concepts to statements, we are able to export and analyse our policy discourse networks. For this purpose, we use a combination of the R package “rDNA” and the Java-based DNA software tool (cp. Leifeld et al. 2018). This procedure has two main advantages. First, it ensures a high reproducibility, as all analytical steps are transparently saved in an R-file. Second, R offers a wide array of statistical methods, like the network visualisations, centrality measures, or cluster analysis.

Figure 1 shows three possibly types of discourse networks, which can be generated and analysed with “rDNA”: affiliation networks, actor networks, and concept networks. An affiliation network or two-mode network reflects the relation between the actors in a network and the policy concepts they support. That is there are two kinds of nodes (political actors and concepts), but ties are only between the different node sets, not among them. The ties in the affiliation network are displayed as the dashed lines in Figure 1. Affiliation networks are rich in information, but they are much more complex and much more difficult to interpret as networks that only contain a single type of nodes.

Figure 1: Illustration of the discourse network model



Annotation: Illustration following Janning et al. (2009)

For large networks, it can be useful to reduce this complexity. One option is the transformation of affiliation networks to actor or concept networks. Both variations are weighted one-mode networks, as they comprise only of one kind of nodes (i.e. actors or concepts). In the actor network, a relation (tie) between two actors (node) means that they have one or more concepts in common. In the concept network, it means that two concepts are at least commonly supported or rejected by two or more actors. For our analysis, this means that the more policy concepts two actors have in common, the more similar is their policy preference towards the climate change problem. Vice versa, two policy

concepts are more closely connected to each other if a larger number of actors commonly support or reject them.

To assess and compare the polarisation of the two discourse networks, we draw on analysing the level of cohesion and centralization of the actor and concept networks. We start by calculating two cohesion statistics, which refer to the macro level of the networks. To measure network cohesion (i.e. how knitted a network is), we use the density statistic. The measure reflects the number of present network relations (ties) relative to the maximum possible relations (the network is fully connected). But, for the sake of comparison, (the networks have a different number of nodes), it is advisable to also control for the average degree of the networks. This statistic can easily be computed by calculating the degree for each node and averaging these values by the number of nodes in a network (Borgatti et al. 2013). Higher levels of network cohesion mean that more actors commonly agree or disagree on policy concepts. We use the level of cohesion as a first indicator for the polarisation of the policy discourse. Higher levels of cohesion are associated with lower levels of polarisation. Lower levels of cohesion are associated with higher levels of polarisation.

Next, we assess the level of centralisation or fragmentation of the networks. Specifically, we calculate degree centralization and betweenness centralization. The centralization statistics measure the extent to which single nodes dominate the network structure, based on their degree centrality³ (degree centralization) or based on their betweenness centrality⁴ (betweenness centralisation). Full centralisation implies that one actor connects to all other actors, there are no connections otherwise, and hence these networks resemble a star. The contrast is a network in which all nodes connect to all other nodes.

Moreover, we compare the degree distribution of the concept networks for both policy discourses. We expect the more polarised network to reveal a left-skewed degree distribution, which means that a smaller number of policy concepts is commonly supported or rejected. Vice versa, we expect the less polarised

³ Degree centrality refers to the number of commonly shared agreements or disagreement an actor has.

⁴ Betweenness centrality is often used to identify brokers, i.e. bridging actors or concepts in our networks. It is defined as the number of shortest paths between two nodes (actors or concept) including a third node. The more often this third node is the shortest connection between pairs (geodesic distance) of nodes, which are not directly linked, the higher its betweenness centrality network.

network to show a right-skewed degree distribution (a larger number of concepts is commonly supported or rejected).

Finally, we analyse the configuration of the prevalent discourse coalitions in both policy discourses. For this purpose, we calculate network clusters by using a hierarchical agglomeration algorithm⁵ that identifies subgroups in a graph object by minimising the dissimilarity of the members of the clusters (Malika Charrad 2017).

4. Results

The following chapter presents the results of our analysis. In the first step, we show how the media attention has developed between 1997 and 2017 in the context of important external, international events, as presented above. In the second step, we analyse and compare the two discourse networks focusing on the years 2007-08 and 2017.

4.1 Media attention

Figure 2 visualises the rise and fall of media attention to the climate change topic between 1997 and 2017. Interestingly, Switzerland's media was rather oblivious of the climate change topic for a long time, although the roots of Swiss climate legislation dates back to the 1980s. Policy makers aimed to introduce a carbon tax on fuels to achieve better air quality, reducing forest dieback that threatened trees across Europe. Many stakeholders regarded the tax as an efficient policy instrument. At the same time, it was heavily criticised by the business lobby. After several unsuccessful attempts to introduce a carbon tax on fuels, the Federal Council (FC) changed its strategy by enlarging the target group of the clean air policy to a wide range of sectors. This step can be regarded as the birth of the CO₂-Act (Kammerer 2018; Lehmann and Rieder 2002). Undoubtedly, the development of the CO₂-Act closely related to the development of the international climate regime. The first version of the new climate protection legislation was supposed to implement Kyoto Protocol requirements. The Kyoto Protocol of 1997 was the first legally binding international agreement that obliged industrialised countries to reduce their emissions in the 2008-12 commitment period. Switzerland agreed to reduce its total GHG emissions by 8% as compared to emission levels in 1990 (FOEN

⁵ We used the "rDNA" to do the cluster analysis, which used the Ward.D2 algorithm by default.

2010). The Swiss CO₂-Act focused on voluntary instruments, but also included a subsidiary carbon tax, which was only to take effect, when the targeted CO₂ emission reduction could not be reached.

Climate change did not attract much public attention despite these domestic developments and important events in the international climate negotiations, like the adoption of the Kyoto Protocol in 1997, the adoption of the Marrakesh Accords in 2001, which spelled out rules to implement the Kyoto Protocol, or the withdrawal of the U.S. from the protocol. It was not until 2005 when media attention reached a first peak with Russia's ratification of the Kyoto Protocol what resulted in the protocol eventually coming into force.

At the domestic level, it became quite soon clear, that voluntary instruments did not suffice to reach the targeted emission reductions. While the federal government introduced a carbon tax on combustibles, skilful lobbying by the Petrol Union prevented the introduction of a carbon tax on motor fuels. Instead, the oil association promoted the introduction of the climate cent – a voluntary levy of 1.5 Swiss cent per litre petrol and diesel (Niederberger 2005; Stiftung Klimarappen 2013)

Public attention peaked in 2007, when the IPCC published its Fourth Assessment Report (AR4) highlighting the urgency to take action to mitigate harmful climate change. At the same time, the international community met in Bali to negotiate a follow-up agreement to the Kyoto Protocol. The Bali summit was very successful and resulted in the Bali Roadmap, which spelled out the next steps towards a new agreement that should regulate international climate protection after the commitment period of the protocol (2008-12) ended. The positive spirit of the climate summit in Bali in 2007, IPCC and Al Gore winning the Peace Nobel Prize, and the alarming Fourth Assessment Report (AR4) of the IPCC (2007), laid a solid foundation for successful negotiations towards a follow-up agreement to the Kyoto-Protocol.

Spurred by the enthusiasm of the international community to protect the global climate, the “Initiative for a Healthy Climate” launched by the Green Party Switzerland (GPS) and a number of environmental NGOs aimed to uplift climate protection legislation to the constitutional level. This endeavour and the need to create a new legal basis for the Post-Kyoto phase (Kyoto II) from 2012-20, prompted the Federal Council to formulate a proposal to revise the CO₂-Act.

Once again, the federal government suggested the introduction of a carbon tax on motor fuels. For a couple of years to come the prospect of its successful introduction were not too bad. However, the enthusiasm was soon enough tempered by the international financial crisis of 2008-09, which directed the public and political attention towards economic issues. At the same time, a strong decline in media attention can be observed.

Maybe related to the financial crisis, the Copenhagen climate conference in 2009 failed to deliver a substantial climate protection agreement, due to a lack of international willingness to formulate legally binding emission reduction commitments (Dimitrov 2010). Particularly, emerging economies and industrialised countries fought over the distribution of duties and responsibilities. The developed countries increasingly criticised the overcome divide into Annex I countries with obligations and the rest of the world without any mandatory reduction targets. In the light of the financial tantrums at home and the changed development status of many former developing countries, many industrialised countries demanded emerging economies to be more engaged in climate change mitigation. The emerging economies, spurned these claims by pointing to the historical responsibility of the Global North.

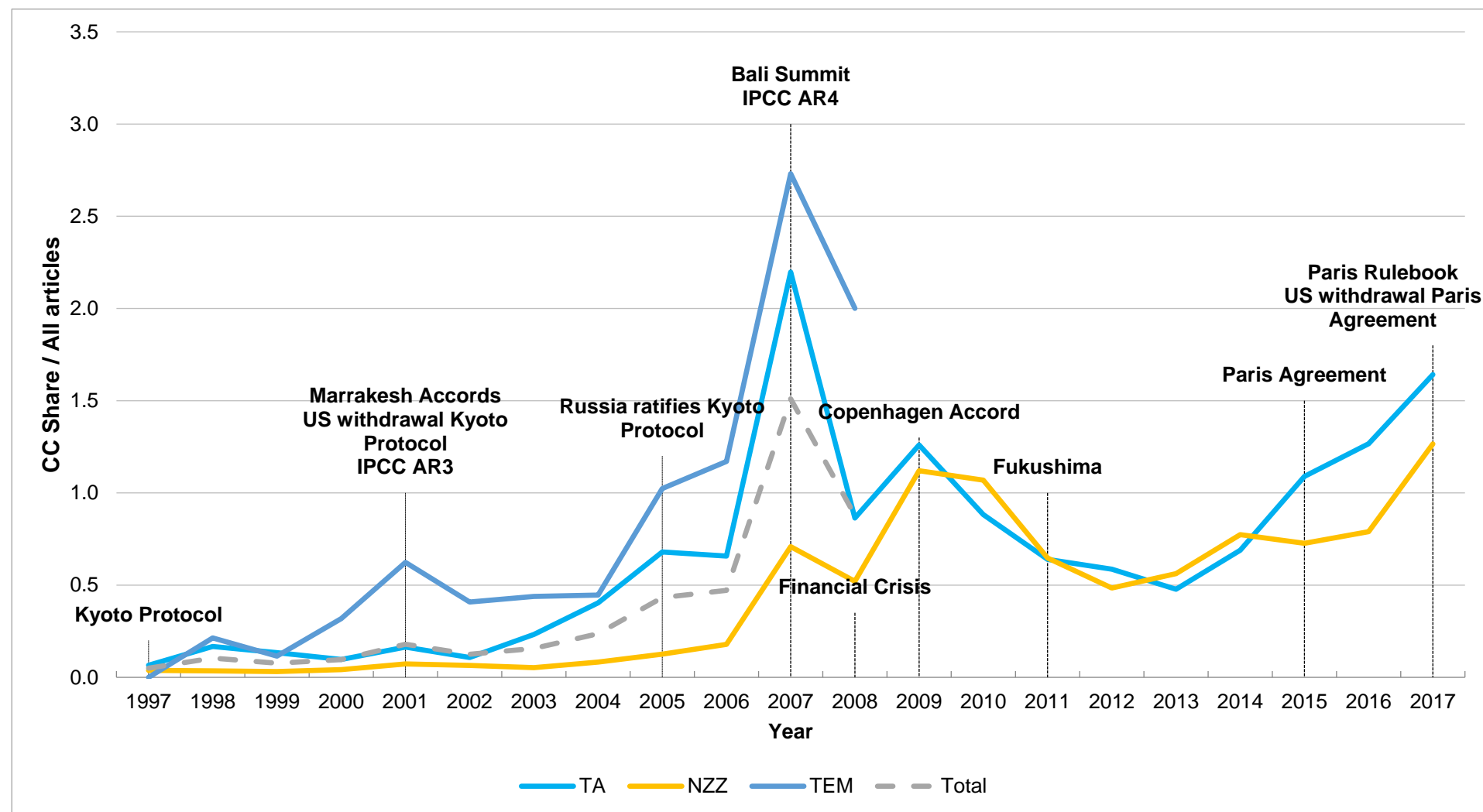
In Switzerland, both the financial crisis and the gridlock of the international negotiations strengthened the political opposition of an ambitious climate protection legislation and providing them with arguments for cutting back Switzerland's climate protection ambitions for the sake of the economy. Eventually, the tax on motor fuels was banned again.

While the climate negotiations in Copenhagen in 2009 and its failure to deliver a Post-Kyoto agreement, again attracted public attention, it did not reach the same level as in 2007. After 2009, media attention to the climate change topic continued to drop until it gained momentum again in 2014. After 2009, the international community started to reconsider the Annex I/ non-Annex I split and began to negotiate a new agreement. The Paris Agreement, despite its limitations (Dimitrov 2016; Brun 2016; Obergassel et al. 2016), is the result of this turn in the development of the international climate regime. Step-by-step, the international community negotiated new principles until it was able to agree on an international agreement that included all countries in 2015. Switzerland ratified the Paris Agreement in 2017, which made necessary the next revision to adjust domestic regulation to the new international obligations. A respective

process has already started in 2016. Recent developments however have shown that the political landscape strongly splits into hardliners from both sides of the political spectrum. Particularly, the ongoing conflict between the Swiss People's Party (SPP) and the left and green parties circumvented the latest revision of CO₂-Act.

Although this analysis of the development over time does not allow identifying clear causal mechanisms explaining the rise and fall of public attention to the climate change topics, it still shows that the public discourse relates to international developments. This allows confirming expectation 1a, according to which the increase as well as the decrease in media attention directs at focusing events. Furthermore, we find partial evidence for our expectation 1b. Media attention rose steeply in 2007 (Bali Summit, AR4) and in 2009 (Copenhagen Conference), but not significantly after the adoption of the Kyoto Protocol in 1997. Public attention to climate change started to increase only in 2005, when the protocol entered into force. Finally, we find support for our third expectation (1c). Media attention declined significantly during the financial crisis and after the failure of the Copenhagen negotiations.

Figure 2: Development of media attention over time (1997-2017)



4.2 Discourse network analysis

We started the analysis of the two policy discourses by evaluating the polarisation of the actor networks. As discussed in section 3, we used a number of descriptive network statistics as indicators for the level of polarisation in the two networks. As Table 2 shows, the actor network of 2007-08 has a higher level of cohesion, as indicated by the higher density score and the greater average degree score than in 2017. This suggests that the policy discourse in 2007-08 prompted a higher level of political consensus, as political actors, on average, shared policy positions with more actors than in 2017, i.e. commonly agreed or disagreed on policy concepts. We take this result as a first indicator for the policy discourse in 2017 to be more polarised than in 2007-08. The assessment of both degree and betweenness centralisation scores allows a similar conclusion. Both scores are higher in 2017 than in 2007-08. As argued in section 3, higher centralisation scores indicate that only a small number of political actors agree on policy positions (degree) or link political actors that do not share positions themselves (betweenness). The higher numbers in 2017, hence, point to a greater level of polarisation in the policy discourse, as there are less actors in “the middle” of the policy discourse sharing positions with actors from all sides of the political spectrum.

Table 2: Actor networks

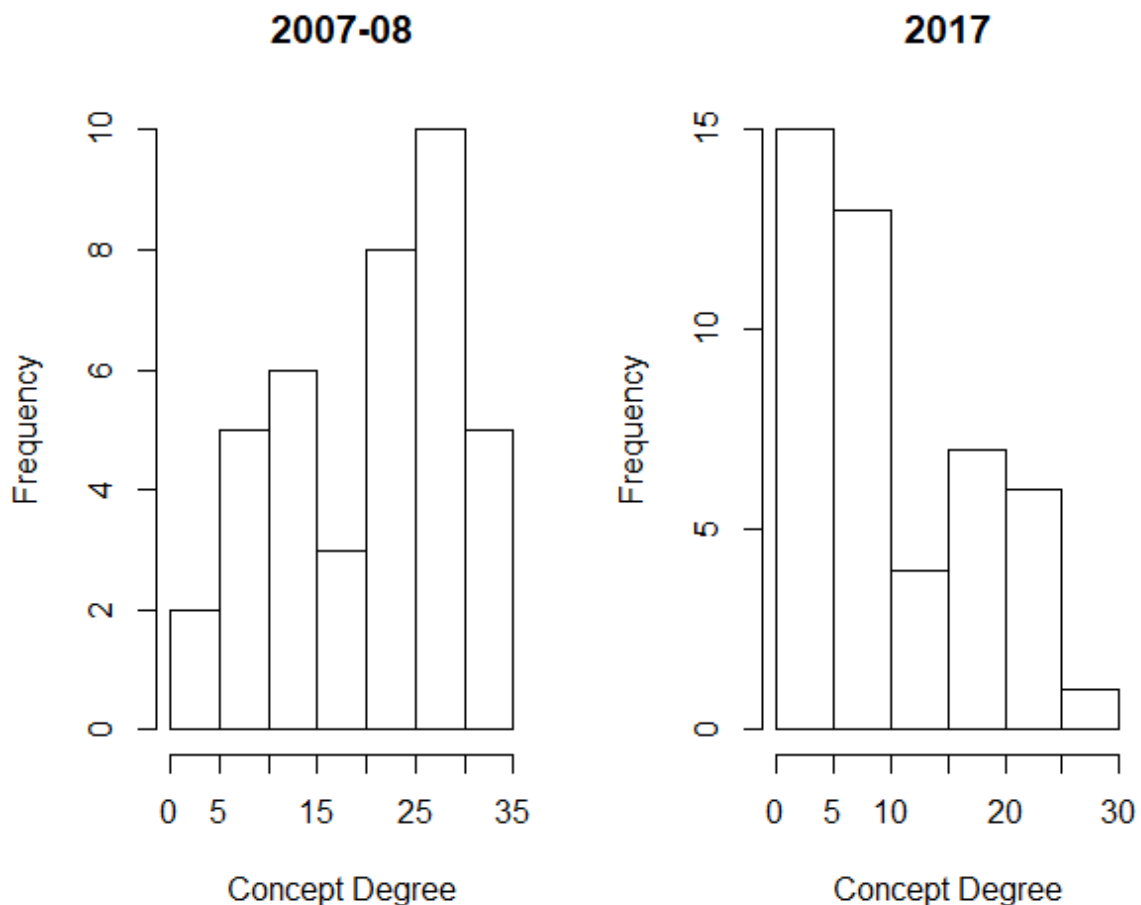
Centralization Statistics	2007-08	2017
Density	0.33	0.23
Average Degree	18.03	10.65
Centralization (Btw.)	0.15	0.28
Centralization (Degree)	0.42	0.56

Figure 3 further supports these findings. The histogram plots show the degree distribution of the concept networks for both phases. For the 2007-08 phase, the degree distribution is right-skewed. This means that more policy concepts are commonly supported by a larger number of actors. For the 2017 policy discourse, the exact opposite can be observed. Here, the degree distribution is left-skewed, which in turn means that a smaller number of concepts are

supported or rejected by many actors. Hence, in 2007-08 more topics reached a higher level of consensus than in 2017 pointing to a higher level of polarisation in the later phase.

The network graphs in Figure 4 and 5 also support these impressions. The graphs present the actor networks for the two phases. The network graph in Figure 4 (2007-08) seems to be much denser and subgroups cannot easily be identified. The network graph in Figure 5 (2017) is rather sparse and we find economic actors clustering at the left hand side and environmental NGOs and other civil society actors on the right hand side of the graph.

Figure 3: Histogram of concept degree distribution in both phases



In sum, these findings support our expectation (2a) that prior to the financial crisis and the failure of the Copenhagen conference, the Swiss climate policy subsystem was less polarised than in 2017. The investigation of the prevailing discourse coalitions in the two phases will help us to make sense of this finding.

Figure 3: Discourse network of 2007-08

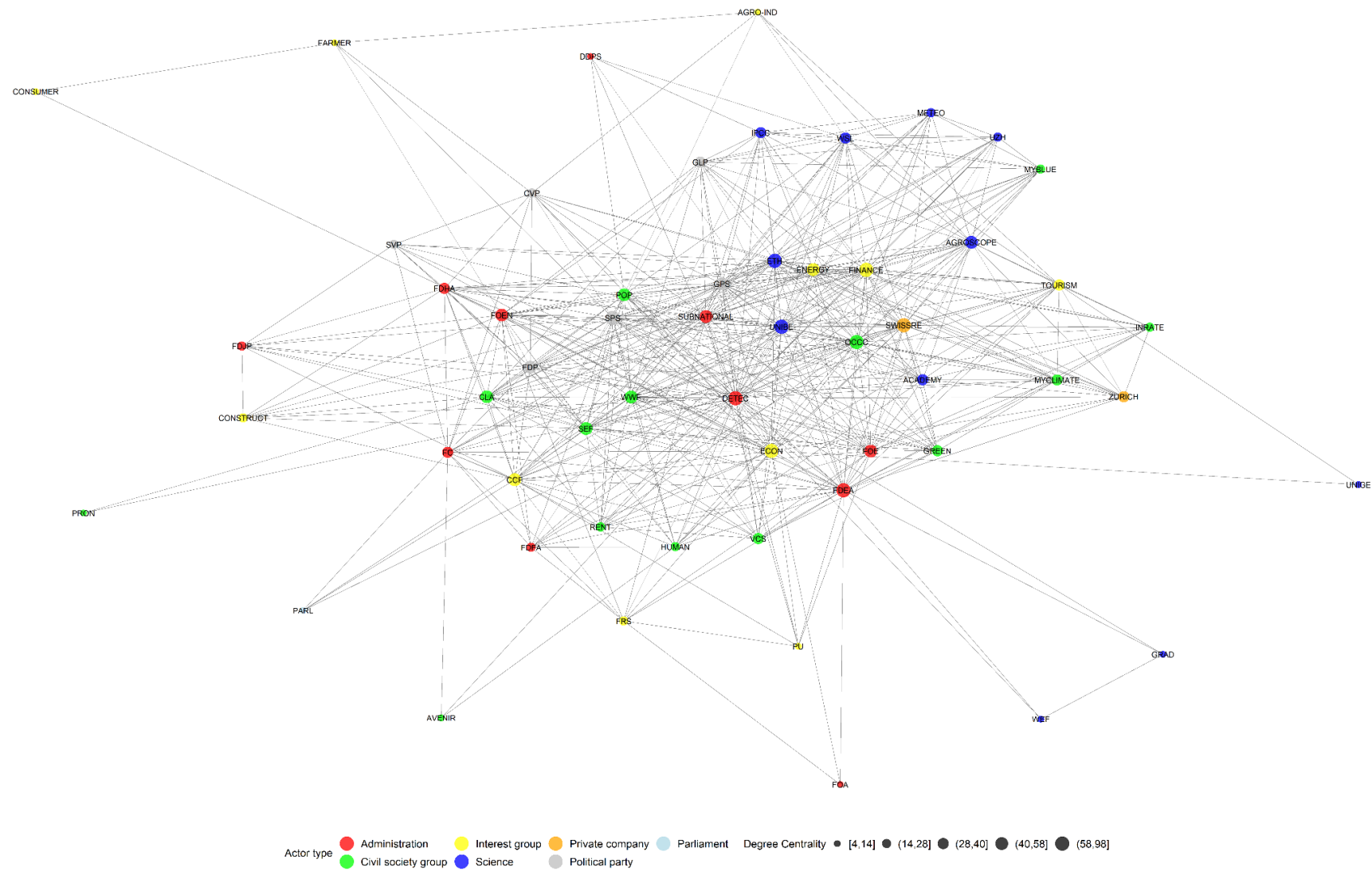
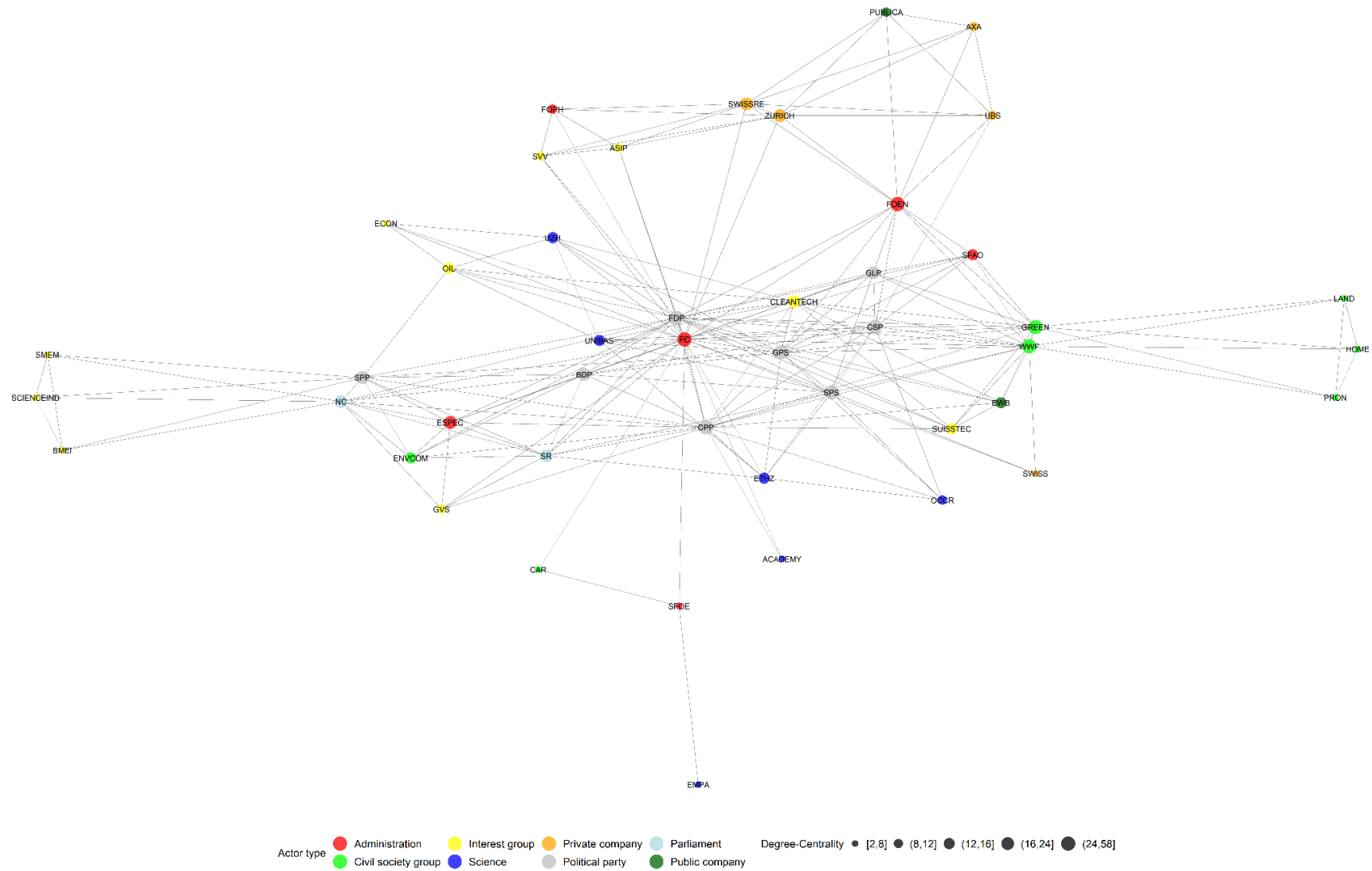


Figure 4: Discourse network of 2017



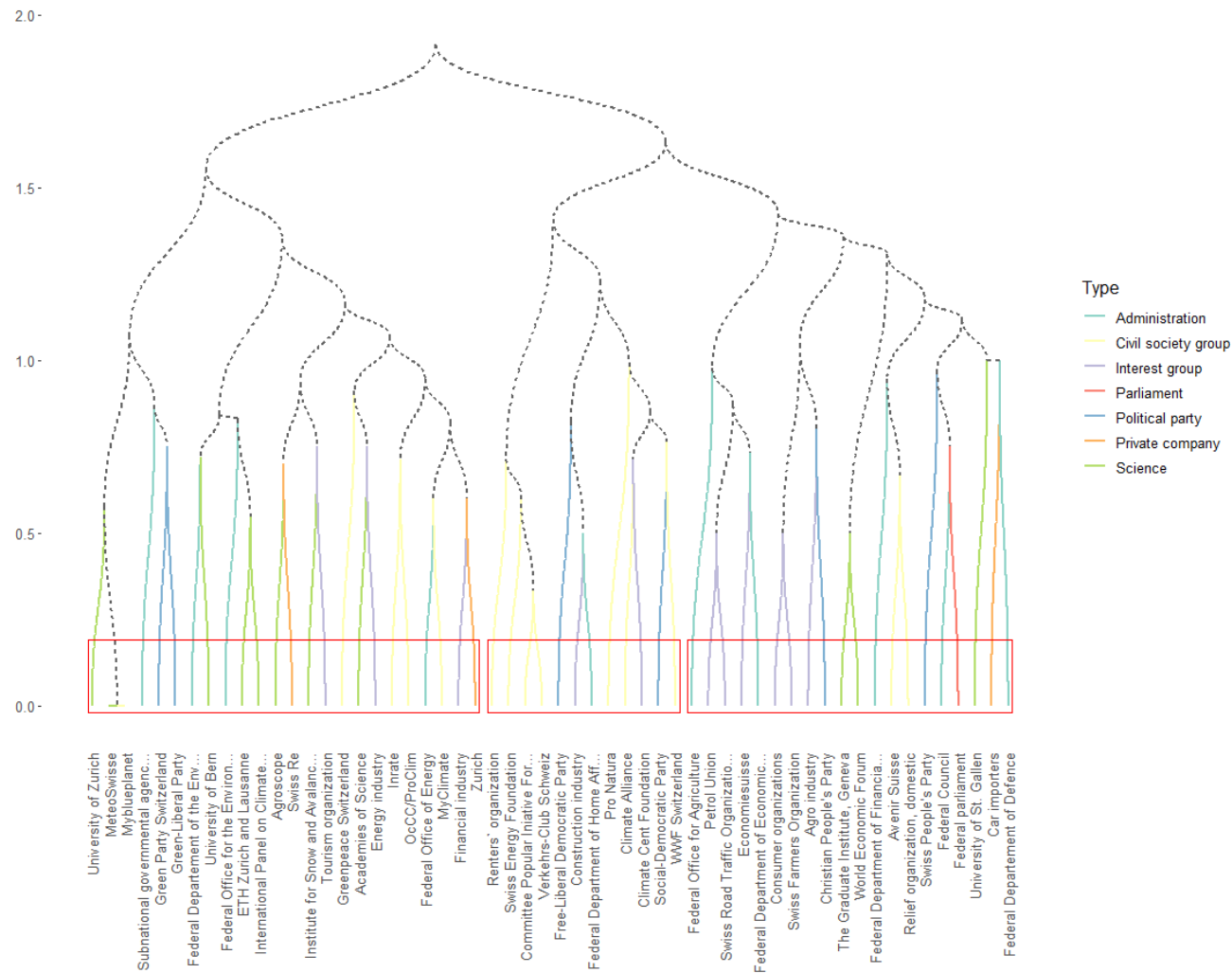
The dendrograph in Figure 6 shows three discourse coalitions prevalent in 2007-08. The first coalition is best described as the “pro-ecology” coalition (displayed on the left hand side of the plot). It consists of science institutions, the Federal Department of the Environment, the Federal Office for the Environment, the Federal Office of the Environment, actors from the insurance and finance sector, both green parties (Green Party Switzerland, Green-liberal Party), and Greenpeace Switzerland. This coalition unites due to a support of the scientific findings of the IPCC and the belief that climate change is real and anthropogenic. They highlight the high vulnerability of Switzerland towards the impacts of climate change and the responsibility to act immediately. Moreover, they point to the historical responsibility of industrialised countries to act. At national scale, they pursue the introduction of an ambitious climate protection policy and demand a drastic reduction of domestic energy consumption.

The second coalition is best described as “pro-economy” (right-hand side of the plot) and comprises mainly of business actors (e.g. *economiesuisse*, car importers), the actors from the agricultural sector, and the SPP. However, this coalition also encompasses the Federal Council and the Federal Parliament and with the relief organisations as an outlier. This coalition is glued together by the conviction that the best option to target the climate change problem are market-based policy instruments, measures to increase energy efficiency, and alternative energy sources (like biofuels). Also, some actors in this coalition (like for example the SPP or the Federal Council) support the increased use of nuclear power plants as a solution to the climate problem. Also, these actors widely share the belief that climate change is also a development issue and a matter of coordination with the European Union. At the same time, it is important to them that Switzerland inhibits a leading role in this process to ensure that its interests are respected.

Finally, we call the third discourse coalition “Broker Coalition” (in the middle of the plot), as it is constituted by variety of actors, which one would usually not expect to ally in the climate change policy subsystem. It consists of a number of civil society and environmental organisations, the Liberal-Democratic and Social-Democratic Party, and the Department of Home Affairs. This coalition is interesting, as it supports (or rejects) policy concepts that intuitively fit to both sides, i.e. the pro-ecology and pro-economy coalitions. Specifically, they support market-based policy instruments like a carbon and vehicle tax to reduce emissions, but reject regulations for being harmful to the economy. They are in

favour of a domestic reduction target, but demand that developing countries must get involved and formulate reduction targets themselves. In addition, they demand that international institutions must be strengthened.

Figure 7: Dendrogram of discourse coalitions in 2007-08



Note: Dendrogram shows the result of the cluster analysis for the actor network in 2007-08. To identify clusters, we used a hierarchical agglomeration algorithm (Ward.D2).

The dendrograph in Figure 8 shows three discourse coalitions prevalent in 2017. The first discourse coalition, we call it “status-quo” coalition (right-hand side of the plot), comprises a group of hardliners that reject any further progression of Switzerland’s climate policy, among them right-wing parties (SPP, FDP, CPP) and business groups. They regard any further ambitions in climate policy as harmful to the economy and support the lowest possible GHG emission reduction target for Switzerland, which must be in any case lower as the EU target. In addition, they consider a fast phase-out of fossil fuels to be unrealistic and irresponsible with respect to securing sufficient energy supply. The strongest opponent, the SPP, even doubts that climate change is anthropogenic and rejects any further climate protection measures.

The second discourse coalition comprises a mixed group of left-wing parties (middle), environmental organisations, administrative actors, and interestingly business actors. When we take a closer look at the policy concepts, supported by the individual members of the coalition, it becomes clear that this discourse coalition splits into an ambitious and moderate subgroup. The ambitious actors encompass the Federal Office for the Environment, left wing and green parties, as well as environmental organisations (e.g. Greenpeace and WWF Switzerland). The more moderate group is constituted by business actors (e.g. *economiesuisse*), the Federal Office for Energy, and a number of science institutions. They support a moderate GHG reduction target and greater flexibility regarding the fulfilment of emission reduction goals, like the possibility to compensate emission abroad and voluntary measures. Nevertheless, the coalition as a whole is united by the interest in revising the CO₂-Act and agreeing on new and foreseeable policy objectives and instrument to implement the Paris Agreement, which is why we call them the “Pro-revision” coalition.

Finally, there is a small group of renowned insurance companies and pension funds, which we call the “Pro-prevention” coalition (left-hand side of the plot). For this group, climate change is a real threat demanding preventive measures and risk assessment. In this context, green investment is discussed as a useful instrument to incentivise the business sector to show climate friendly behaviour.

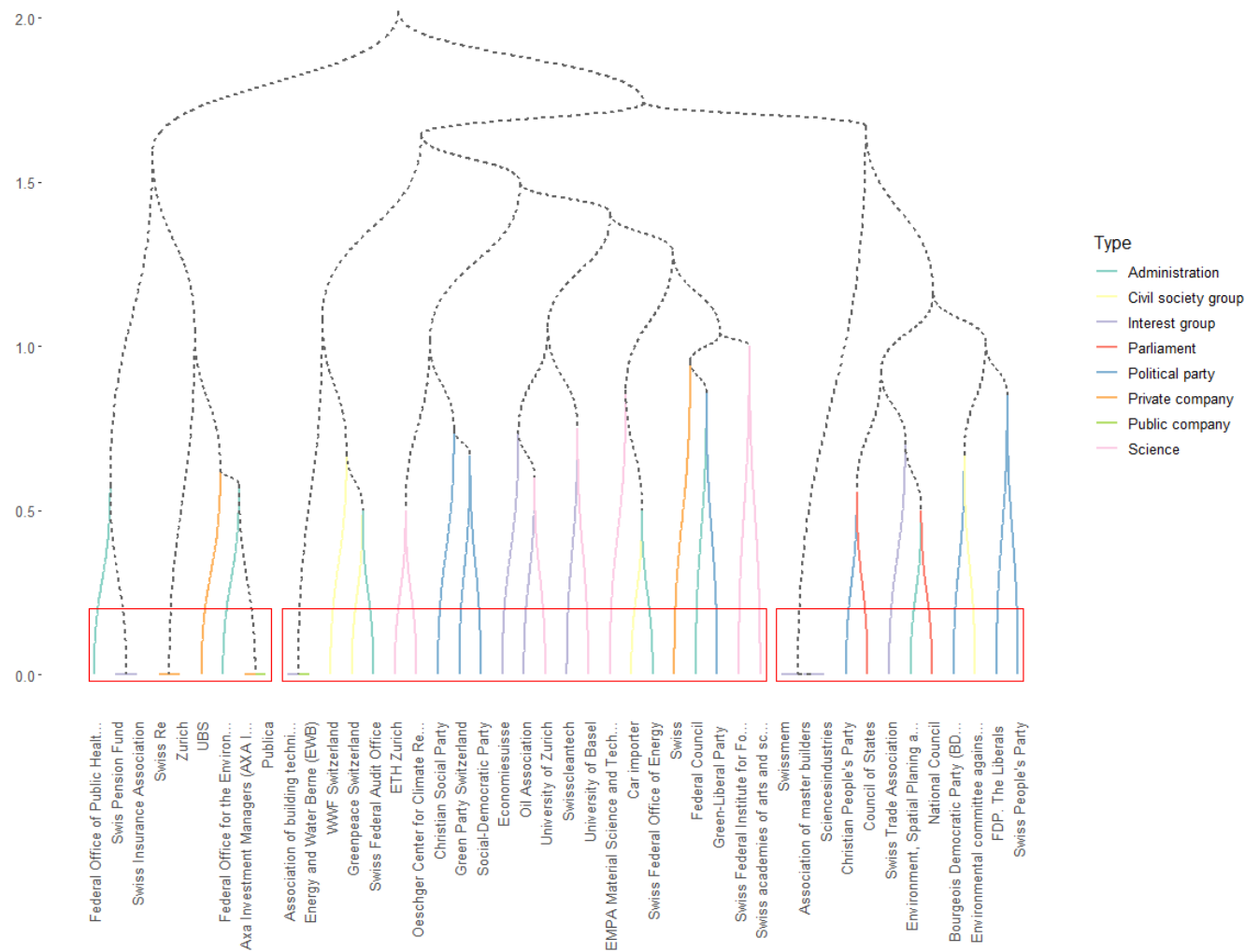
In sum, the discourse analysis has shown that the outbreak of the financial crisis in 2008 and the Copenhagen conference in 2009 served as a focusing event in the policy subsystem. Not only they caused a steep decline in the public interest, but they also link to a change in the configuration of the policy

discourse. Specifically, our results show, that the policy discourse was less polarised in 2007-08 than in 2017. We found that in the first phase policy actors from all sides of the political spectrum more often agreed on climate policy concepts. In particular, we observed a large “broker” discourse coalition that united different actors and policy concepts, which are typically assigned to the ‘pro-ecology’ side (e.g. strict targets, taxes) and to the ‘pro-economie’ side (e.g. concern for the economy). We argue that this lower level of polarisation in the policy subsystem links to the overall greater enthusiasm for climate protection triggered by the promising developments at international scale. As a result, in particular the events in 2007 (Bali summit, AR4) opened a window of opportunity for policy change to strengthen Switzerland’s climate change policy.

In 2017, a persistent conflict lasted between a number of hardliners that rejected any further climate protection ambitions (headed by the Swiss People’s Party, SPP) and a number of pro-ecology actors that had a strong stake in the climate protection topic (e.g. the GPS). We argue that this domestic gridlock is still linked to the events in 2008 (financial crisis) and in 2009 (failure of the Copenhagen conference). The outbreak of the financial crisis shifted public attention away from climate change towards economic concerns. This decline was furthermore reinforced by the failure of the Copenhagen climate conference in 2009, which caused a wide disillusionment towards the ability of the international climate regime to combat climate change. As a result, the subsystem became continuously more polarised with some actors that categorically rejected a more ambitious climate policy and others that wanted to put forward a progressive implementation of the Paris Agreement. This closed the window of opportunity in the subsystem for policy change and led to a long phase of policy stasis, i.e. the introduction of a carbon tax on motor fuel was prevented.

In consequence, we find some first evidence that supports our expectation 2c.

Figure 8: Dendrograph of Coalitions 2017



Note: Dendrograph shows the result of the cluster analysis for the actor network in 2017. To identify clusters, we used a hierarchical agglomeration algorithm (Ward.D2).

5. Discussion and concluding remarks

This article investigated how important international developments have affected specific policy positions of core actors in the Swiss climate policy subsystem and how they have altered the constellations of prevailing discourse coalitions. In addition, we tried to draw some first conclusions on how decisive international events have affected domestic policies and policy change over time.

We first investigated the rise and fall of media attention to the climate change topic in the past two decades; and we set this development in context to important international events. We started with the argument that Swiss climate legislation has always been stimulated by international developments. Specifically, we expected a number of crucial external events to increase public attention and the level of ambition in the climate policy subsystem. These events are the Kyoto Protocol of 1997, the publication of the Fourth Assessment Report (AR4) of the IPCC in 2007, the Bali climate conference in 2007, the Copenhagen climate conference in 2009, and the Paris Agreement in 2015. Conversely, we expected that with the outbreak of the financial crisis in 2008 public attention shifted away from climate change towards economic concerns. This decline was furthermore reinforced with the failure of the Copenhagen climate conference in 2009, which caused a wide disillusionment towards the ability of the international climate regime to combat climate change.

Our results widely support our expectations. We have found evidence that both media attention and the domestic policy process were triggered by international developments. Although this analysis of the development over time does not allow identifying clear causal mechanisms explaining the rise and fall of public attention to the climate change topics, it still nicely illustrates that the public discourse relates to international developments. This allows confirming expectation 1a, according to which the increase as well as the decrease in media attention directs at focusing events. Furthermore, we found partial evidence for our expectation 1b. Media attention rose steeply in 2007 (Bali Summit, AR4) and in 2009 (Copenhagen Conference), but not significantly after the adoption of the Kyoto Protocol in 1997. Public attention to climate change started to increase only in 2005, when the protocol entered into force. Finally, we found support for our third expectation (1c). Media attention declined significantly during the financial crisis and after the failure of the Copenhagen

negotiations. Moreover, this analysis showed that these two events can be seen as decisive external shocks to the policy subsystem as they were not only connected to a steep decline in public interest in the climate topic, but also linked to a change in the configuration of the policy discourse.

Moreover, we argued that the most decisive event was the failure of the Copenhagen conference to deliver a follow-up agreement to the Kyoto-Protocol. On one hand, this event caused the drastic paradigm-shift in the international relations paving the way for the Paris Agreement. On other hand, the international fiasco spurred arguments of Switzerland's opposition against a progressive climate change mitigation policy and united them. The pro-ecology coalition (left and green parties and NGOs) supported a very ambitious climate protection legislation to keep up with the Paris Agreement and a Swiss forerunner role. The pro-economy coalition (right wing parties and business sector) did not see the necessity of increasing climate protection efforts in Switzerland, but disregarded them as being bad for the economy. Accordingly, we found evidence that prior to the financial crisis and failure of the Copenhagen conference the Swiss climate policy subsystem was less polarised (support for expectation 2a). We found that in the first phase policy actors from all sides of the political spectrum more often agreed on climate policy concepts. In particular, we observed a large "broker" discourse coalition that united different actors and policy concepts, which are typically assigned to the 'pro-ecology' side (e.g. strict targets, taxes) and to the 'pro-economy' side (e.g. concern for the economy). We argue that this lower level of polarisation in the policy subsystem and explain this with the overall greater enthusiasm for climate protection triggered by the promising developments at international scale. As a result, in particular the events in 2007 (Bali summit, AR4). This opened a window of opportunity for policy change towards a more ambitious climate protection measures, i.e. the introduction of a carbon tax on motor fuels.

After the financial crisis and Copenhagen conference and with the paradigm-shift in the international climate regime, the subsystem became continuously more polarised. In 2017, we observed a persistent conflict between a number of hardliners that rejected any further climate protection ambitions (headed by the Swiss People's Party, SPP) and a number of pro-ecology actors that had a strong stake in the climate protection topic (e.g. the GPS). In our opinion, this domestic gridlock is still linked to the events in 2008 (financial crisis) and in 2009 (failure of the Copenhagen conference). The outbreak of the financial crisis in

2008 shifted public attention away from climate change towards economic concerns. This decline was furthermore reinforced with the failure of the Copenhagen climate conference in 2009, which caused a wide disillusionment towards ability of the international climate regime to combat climate change. This closed the window of opportunity in the subsystem for policy change and led to a long phase of policy stasis, i.e. the introduction of a carbon tax on motor fuel was prevented.

Hence, this analysis provides some first insights on how altering policy discourses and policy change might be connected. As we have argued above, the literature offers no consensus on whether a discursive approach is able to reflect policy change (see for example Tosun and Lang 2016; Leifeld 2016). However, by investigating the policy discourse over time applying network techniques, we were able observe a change in policy discourse configuration that can be linked to policy output. If this is a reliable measure of policy change, cannot be determined in this article. However, we found first indicators for causalities between changing policy discourses and policy change. These findings point to the necessity to conduct more research in this important area.

6. References

- Barthe, Susan (2001): Die verhandelte Umwelt. Zur Institutionalisierung diskursiver Verhandlungssysteme im Umweltbereich am Beispiel der Energiekonsensgespräche von 1993. Baden-Baden: Nomos.
- Baumgartner, Frank; Jones, Bryan (1993): Agendas and Instability in American Politics. Chicago, London: The University Chicago Press.
- Baumgartner, Frank R. (2006): Punctuated Equilibrium Theory and Environmental Policy. In Robert Repetto (Ed.): Punctuated Equilibrium and the Dynamics of U.S. Environmental Policy. New Haven: Yale University Press, pp. 24–46.
- Baumgartner, Frank R.; Berry, Jeffrey M.; Hojnacki, Marie; Kimball, David C.; Leech, Beth L. (2009): Lobbying and policy change. Who wins, who loses, and why. Chicago: University of Chicago.
- Birkland, Thomas A. (1997): After disaster. Agenda setting, public policy, and focusing events. Washington, DC: Georgetown University Press (American governance and public policy). Available online at <http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=21644>.

Birkland, Thomas A. (2015): *An Introduction to the Policy Process. Theories, Concepts, and Models of Public Policy Making*. Fourth ed. Abingdon, Oxon: Taylor and Francis. Available online at <http://gbv.ebib.com/patron/FullRecord.aspx?p=4525500>.

Birkland, Thomas A.; DeYoung, Sarah A. (2013): Focusing events and policy windows. In Eduardo Araral, JR., Scott Fritzen, Michael Howlett, M. Ramesh, Xun Wu (Eds.): *Routledge Handbook of Public Policy*. London: Routledge, pp. 175–188.

Borgatti, Stephen P.; Everett, Martin; Johnson, Jeffery (2013): *Analyzing Social Networks*. London: Sage.

Brun, Aslak (2016): Conference Diplomacy: The Making of the Paris Agreement. In *Politics and Governance* 4 (3), pp. 115–123.

Coleman, James S. (1974): *Power and Structure of Society*. New York: Norton.

Dimitrov, Radoslav (2010): Inside Copenhagen. The State of Climate Governance. In *Global Environmental Politics* 10 (2), pp. 18–24.

Dimitrov, Radoslav S. (2016): The Paris Agreement on Climate Change: Behind Closed Doors. In *Global Environmental Politics* 16 (3), pp. 1–11. DOI: 10.1162/GLEP_a_00361.

Fischer, Frank (2003): *Reframing Public Policy*: Oxford University Press.

Fischer, Manuel (2014): Coalition Structures and Policy Change in a Consensus Democracy. In *Policy Studies Journal* 42 (3), pp. 344–365.

Hajer, Maarten A. (1995): *The politics of environmental discourse. Ecological modernization and the policy process*. Oxford, New York: Clarendon Press; Oxford University Press.

Howlett, Michael; Ramesh, M.; Perl, Anthony (2009): *Studying public policy. Policy cycles & policy subsystems*. 3rd. New York: Oxford University Press.

Ingold, Karin (2011): Network Structures within Policy Processes. Coalitions, Power, and Brokerage in Swiss Climate Policy. In *Policy Studies Journal* 39 (3), pp. 435–459.

Ingold, Karin; Lieberherr, Eva; Schläpfer, Isabelle; Steinmann, Kathrin; Zimmermann, Willi (2016): *Umweltpolitik der Schweiz. Ein Lehrbuch*. St. Gallen: Dike Verlag.

IPCC (2007): *Climate Change 2007. Synthesis Report. Contributions of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. Geneva, Switzerland.

Janning, Frank; Leifeld, Philip; Malang, Thomas; Schneider, Volker (2009): Diskursnetzwerkanalyse. Überlegungen zur Theoriebildung und Methodik. In Volker Schneider, Frank Janning, Philip Leifeld, Thomas Malang (Eds.): Politiknetzwerke. Modelle Anwendungen und Visualisierungen. Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 59–92.

Jenkins-Smith, Hank C.; Nohrstedt, Daniel; Sabatier, Paul A.; Weible, Christopher M. (2014): The Advocacy Coalition Framework: Foundations, Evolution, and Ongoing Research. In Paul Sabatier, Christopher Weible (Eds.): Theories of the policy process. Third Edition. Boulder, Colo.: Westview Press, pp. 183–224.

Kammerer, Marlene (2018): Climate Politics at the Intersection between International Dynamics and National Decision-making. A Policy Network Approach. Dissertation. Universität Zürich, Zürich.

Kenis, P.; Schneider, Volker (1991): Policy Networks and Policy Analysis: Scrutinizing a New Analytical Toolbox. In B. Marin, Renate Mayntz (Eds.): Policy Networks: Empirical Evidence and Theoretical Considerations. Frankfurt am Main: Campus-Verlag.

Kingdon, John W. (1995): Agendas, alternatives and public policies. New York.

Knill, Christoph; Tosun, Jale (2012): Public policy. A new introduction. Basingstoke, Hampshire: Palgrave Macmillan.

Knoke, David (1996): Comparing policy networks. Labor politics in the U.S., Germany, and Japan. Cambridge: Cambridge Univ. Press (Cambridge studies in comparative politics). Available online at <http://www.loc.gov/catdir/description/cam027/95012513.html>.

Kübler, Daniel (2001): Understanding policy change with the advocacy coalition framework. an application to Swiss drug policy. In *Journal of European Public Policy* 8 (4), pp. 623–641. DOI: 10.1080/13501760110064429.

Lehmann, Luzia; Rieder, Stefan (2002): Wissenschaftliches Wissen in der politischen Auseinandersetzung. Fallstudie zur Genese des CO₂-Gesetzes im Auftrag der Arbeitsgruppe Transdisziplinarität der Energiekommission der Schweizerischen Akademie der Technischen Wissenschaften (SATW). Edited by Interface.

Leifeld, Philip (2009): Die Untersuchung von Diskursnetzwerken mit dem Discourse Network Analyzer (DNA). In Volker Schneider, Frank Janning, Philip Leifeld, Thomas Malang (Eds.): Politiknetzwerke. Modell, Anwendungen und Visualisierungen. Wiesbaden: VS Verlag für Sozialwissenschaften.

Leifeld, Philip (2016): Discourse Network Analysis: Policy Debates as Dynamic Networks. In Jennifer Nicoll Victor, Alexander H. Montgomery, Mark Lubell,

Michael T. Heaney, James M. Strickland (Eds.): The Oxford Handbook of Political Networks: Oxford University Press (1).

Leifeld, Philip (2018): Discourse Network Analyzer (DNA). Version dna-2.0-beta22. Available online at <https://github.com/leifeld/dna/releases>, checked on 11/13/2018.

Leifeld, Philip; Gruber, Johannes; Bossner, Felix Rolf (2018): Discourse Network Analyzer Manual. Last update: DNA 2.0 beta 21 with rDNA 2.1.0 on May 21, 2018. Available online at <https://github.com/leifeld/dna/releases>.

Malika Charrad (2017): Cluster Analysis for Social Networks Using R. In Matthias Dehmer, Yongtang Shi, Frank Emmert-Streib (Eds.): Computational network analysis with R. Applications in biology, medicine, and chemistry. Weinheim: Wiley-VCH Verlag GmbH & Co. KGaA (Quantitative and network biology, volume 7), pp. 267–287.

Moyson, Stéphane (2017): Cognition and policy change: the consistency of policy learning in the advocacy coalition framework. In *Policy and Society* 36 (2), pp. 320–344. DOI: 10.1080/14494035.2017.1322259.

Niederberger, Anne Arquit (2005): The Swiss Climate Penny: An innovative approach to transport sector emissions. In *Transport Policy* 12 (4), pp. 303–313. DOI: 10.1016/j.tranpol.2005.05.003.

Nohrstedt, Daniel (2010): Do Advocacy Coalitions Matter? Crisis and Change in Swedish Nuclear Energy Policy. In *Brit. J. Polit. Sci.* 20 (2), pp. 309–333. DOI: 10.1093/jopart/mun038.

Nohrstedt, Daniel; Weible, Christopher; Ingold, Karin; Henry, Adam (forthcoming): Advancing Comparative Policy Process Research: Insights and Lessons from the Advocacy Coalition Framework Research Program. In Guy Peters, Guillaume Fontaine (Eds.): Handbook of Methods for Comparative Policy Analysis. Edward Elgar Publishing Ltd.

Obergassel, Wolfgang; Arens, Christof; Hermwille, Lukas; Ott, Hermann; Kreiblich, Nico; Wang-Helmreich, Hanna (2018): Paris Fine Print Adopted, Implementing Pending. An Assessment of COP24 in Katowice. Wuppertal Institute for Climate, Environment and Energy.

Obergassel, Wolfgang; Arens, Christof; Lukas, Hermwille; Kreiblich, Nico; Mersman, Florian; Ott, Hermann; Wang-Helmreich, Hanna (2016): Phoenix from the Ashes - An Analysis of the Paris Agreement to the United Nations Framework Convention on Climate Change. Wuppertal Institute for Climate, Environment and Energy.

Sabatier, Paul; Jenkins-Smith, Hank (1993): Policy Change and Learning. An Advocacy Coalition Approach. Boulder, CO: Westview Press.

- Sabatier, Paul; Weible, Christopher (Eds.) (2014): Theories of the policy process. Third Edition. Boulder, Colo.: Westview Press.
- Sager, Fritz; Ingold, Karin; Balthasar, Andreas (2018): Policy-Analyse in der Schweiz. Besonderheiten, Theorien, Beispiele. 2. Auflage. Zürich: Neue Zürcher Zeitung NZZ Libro (Politik und Gesellschaft in der Schweiz).
- Schön, Donald Alan; Rein, Martin (1994): Frame reflection: Basic Books (XX, 247 S.).
- Shanahan, Elizabeth A.; Jones, Michael D.; McBeth, Mark K. (2011): Policy Narratives and Policy Processes. In *Policy Stud J* 39 (3), pp. 535–561. DOI: 10.1111/j.1541-0072.2011.00420.x.
- Stiftung Klimarappen (2013): Abschlussbericht 2005-2013. Zürich. Available online at <http://www.klimarappen.ch/en/.4.html>, checked on 5/3/2016.
- Tosun, Jale; Lang, Achim (2016): The Politics of Hydraulic Fracturing in Germany: Party Competition at Different Levels of Government. In Christopher M. Weible, Tanya Heikkila, Karin Ingold, Manuel Fischer (Eds.): Policy Debates on Hydraulic Fracturing. Comparing Coalition Politics in North America and Europe. New York, s.l.: Palgrave Macmillan US.
- Walgrave, Stefaan; Varone, Frédéric (2008): Punctuated Equilibrium and Agenda-Setting: Bringing Parties Back in: Policy Change after the Dutroux Crisis in Belgium. In *Governance* 21 (3), pp. 365–395. DOI: 10.1111/j.1468-0491.2008.00404.x.
- Weible, Christopher; Ingold, Karin (2018): Why advocacy coalitions matter and practical insights about them. In *policy polit* 46 (2), pp. 325–343. DOI: 10.1332/030557318X15230061739399.

7. Appendix

Appendix 1: Actor list

Table 3: Actors 2007-08

Actor	Alias	Actortype
Agro industry, domestic	AGR-DOM	Interest group
Agroscope	AGRO	Science
Avenir Suisse	AVENIR	Civil society group
Cantonal government	CAN	Administration
Car importer	CAR	Private company
Christian People's Party	CPP	Political party
Climate Alliance	CLA	Civil society group
Climate Cent Foundation	CCF	Interest group
Committee Popular Initiative For a Healthy Climate	POP	Civil society group
Communal administration	MUN	Administration
Construction industry, domestic	STR	Private company
Consumer organization, domestic	CON	Interest group
ETH Lausanne	EPFL	Science
ETH Zurich	ETHZ	Science
Economiesuisse	ECON	Interest group
Ecos	ECOS	Science
Energy industry, domestic	ENE-DOM	Private company
FDEA	FDEA	Administration
FDP. The Liberals	FDP	Political party
Federal Council	FC	Administration
Federal Office for Agriculture	FOA	Administration
Federal Office for the Environment	FOEN	Administration
Federal parliament	PARL	Parliament
Financial industry, domestic	FINANCE	Interest group
Food industry, international	FOOD	Interest group
Green Party Switzerland	GPS	Political party
Green-Liberal Party	GLP	Political party
Greenpeace Switzerland	GREEN	Civil society group
Inrate	INRATE	Civil society group
Intergovernmental Panel on Climate Change	IPCC	Science
MeteoSuisse	METEO	Science
MyClimate	MYCLIMATE	Civil society group
Myblueplanet	MYBLUE	Civil society group
NGO, domestic	NGO-DOM	Interest group
Nestlé	NESTLE	Private company
OcCC/ProClim	OCCC	Civil society group
Oil Association	OIL	Interest group
Pro Natura	PRON	Civil society group
Push	PUSH	Civil society group
Relief organization, domestic	REL-DOM	Civil society group

Schweizer Bauernverband	FARMER	Interest group
Schweizer Lawinenforschungsinstitut	SLI	Science
Schweizerische Energiestiftung	SES	Civil society group
Social-Democratic Party	SPS	Political party
Strassenschweiz	FRS	Interest group
Swiss	SWISS	Private company
Swiss Federal Department of Defence, Civil Protection and Sport	DDPS	Administration
Swiss Federal Department of Foreign Affairs	FDFA	Administration
Swiss Federal Department of Home Affairs	FDHA	Administration
Swiss Federal Department of Justice and Police	FDJP	Administration
Swiss Federal Department of the Environment, Transport, Energy and Communications	DETEC	Administration
Swiss Federal Institute for Forest, Snow and Landscape Research	WSL	Science
Swiss Federal Office of Energy	SFOE	Administration
Swiss People's Party	SPP	Political party
Swiss Re	SWISSRE	Private company
Swiss academies of arts and sciences	ACADEMY	Science
The Graduate Institute, Geneva	GRAD	Science
Tourism industry, domestic	TOU-DOM	Private company
Tourism organization, local/regional	TOU-LOC	Interest group
University of Bern	UNIBE	Science
University of Zurich	UZH	Science
Verkehrs-Club Schweiz	VCS	Civil society group
WWF Switzerland	WWF	Civil society group
World Economic Forum	WEF	Science
Zurich	ZURICH	Science

Table 4: Actor List 2017

Actor	Alias	Actortype
Association of building technicians	SUISSTEC	Interest group
Association of master builders	BMEI	Interest group
Axa Investment Managers (AXA IM)	AXA	Private company
Bourgeois Democratic Party (BDP)	BDP	Political party
Car importer	CAR	Civil society group
Christian People's Party	CPP	Political party
Christian Social Party	CSP	Political party
Council of States	SR	Parliament
EMPA Material Science and Technology	EMPA	Science
ETH Zurich	ETHZ	Science
Economiesuisse	ECON	Interest group
Energy and Water Berne (EWB)	EWB	Public company
Environment, Spatial Planning and Energy Committees	ESPEC	Administration
Environmental committee against energy law	ENVCOM	Civil society group
FDP. The Liberals	FDP	Political party
Federal Council	FC	Administration
Federal Office for the Environment	FOEN	Administration
Federal Office of Public Health (FOPH)	FOPH	Administration
Federal parliament	PARL	Parliament
Green Party Switzerland	GPS	Political party
Green-Liberal Party	GLP	Political party
Greenpeace Switzerland	GREEN	Civil society group
Homeland Protection	HOME	Civil society group
Landscape Protection	LAND	Civil society group
Oeschger Center for Climate Research	OCCR	Science
Oil Association	OIL	Interest group
Pro Natura	PRON	Civil society group
Publica	PUBLICA	Public company
Sciencesindustries	SCIENCEIND	Interest group
Social-Democratic Party	SPS	Political party
Swiss Pension Fund	ASIP	Interest group
Swiss	SWISS	Private company
Swiss Federal Audit Office	SFAO	Administration
Swiss Federal Institute for Forest, Snow and Landscape Research	WSL	Science
Swiss Federal Office of Energy	SFOE	Administration
Swiss Insurance Association	SVV	Interest group
Swiss People's Party	SPP	Political party
Swiss Re	SWISSRE	Private company
Swiss Trade Association	GVS	Interest group
Swiss academies of arts and sciences	ACADEMY	Science
Swisscleantech	CLEANTECH	Interest group
Swissmem	SMEM	Interest group
UBS	UBS	Private company
University of Basel	UNIBAS	Science
University of Zurich	UZH	Science
WWF Switzerland	WWF	Civil society group
Zurich	ZURICH	Private company

Appendix 2: Concepts

Table 4: Policy concepts in discourse network of 2007-08

Political Concept	Orientation
(Voluntary) CO2 compensation for air travel	Switzerland
Binding national emission reduction targets needed	General
CC as security/migration issue	Switzerland
CC as threat to the domestic economy	Switzerland
CC impacts uncertain	General
CC is (also) development issue	General
CC is one of biggest challenges of humanity	General
CC is real and anthropogenic	General
CO2 label for food	General
Carbon tax for agricultural sector (methane)	General
Climate Cent valuable contribution to reduce emissions	Switzerland
Climate change regulation as threat to economy	Switzerland
Coordination with EU climate change regime	International
Drastic reduction in energy consumption needed	Switzerland
Emission reduction through carbon sequestration	Switzerland
Energy efficiency as a main strategy	Switzerland
Federal climate protection measures sufficient	Switzerland
Full CO2 compensation obligation for new gas-fired power plants (otherwise carbon tax)	Switzerland
Higher fuel prices to reduce emissions	Switzerland
Historical responsibility of industrialized countries to act	General
Inclusion of carbon sequestration of forests into climate regime	General
Increasing responsibility of developing countries to act	International
Independent Swiss climate policy necessary/possible	Switzerland
International agreement needed	International
International carbon tax	International
Introduction of general energy levy	General
Limiting carbon offsetting abroad	International
Market-based solutions/instruments instead of regulation	General
More strict regulation of high emissions vehicles	General
New gas-fired power plants	Switzerland
New nuclear power plants	Switzerland
Positive appraisal of IPCC and its work	General
Promotion of alternative energies	General
Promotion of biofuels as alternative energy	General
Promotion of energy efficiency	General
Putting price on water	General
Regulation via motor vehicle tax	General
Scrapping premium as climate protection measure	General
Strengthening international environmental institutions	International
Switzerland particularly vulnerable to CC	Switzerland
Switzerland should take leading role in climate protection	Switzerland

Technical solutions for climate change adaptation	General
Urge for immediate action (no wait-and-see strategy)	General

Table 5: Policy concepts in discourse network of 2017

Political Concept	Orientation
1 bn Dollar Climate Aid	International
40% Reduction on Average	Switzerland
450-600 mil Dollar Climate Aid	International
Alternative Energy	General Statement
CC Impacts are Severe and Observable	General Statement
CC as Business Opportunity	General Statement
CC as Insurance Problem	General Statement
CC as immediate Problem	General Statement
CC is Real and Anthropogenic	General Statement
Compensation of Fuel Imports	Switzerland
ETS is not efficient	Switzerland
EU ETS in aviation	EU
Energylaw	Switzerland
Energystrategy 2050	Switzerland
Expansion CO2 tax	Switzerland
Flexible Foreign Compensation	Switzerland
Fossil Energy	Switzerland
Green Investments	Switzerland
High Quality Certificates	Switzerland
Increase CO2 tax	Switzerland
International ETS in Aviation	International
KELS (Climate and Energy Control System)	Switzerland
Less strict regulation on private cars as EU	Switzerland
Link to EU ETS	EU
Market-based Solutions/Instruments instead of Regulation	General Statement
Measures to Prevent Climate Risks	Switzerland
Over 40% Reduction	Switzerland
Private Companies are Important Climate Protectors	General Statement
Regulation is an Economical Threat	General Statement
Revision of the CO2 Act	Switzerland
Swiss Ratification of PA	International
Switzerland is Vurnerable	Switzerland
Switzerland should take Leading Role	Switzerland
Tax on Flight Tickets	Switzerland
Trump Administration is a threat for CC	International
Unter 40% Reduction	Switzerland
Voluntary Actions	Switzerland